

CS3425 Lab 1 – Get started with MySQL

Fall 2023 (100 points)

Resource

MySQL 8.0 manual: <https://dev.mysql.com/doc/refman/8.0/en/>

Software needed:

MySQL command line: MySQL Workbench

Any text editor: vi, emacs, textedit, notepad, etc

Lab report requirement:

You need to write lab report about this lab and submitted to Gradescope before the due date. In your lab report, you need to:

- 1) First, label the question number clearly.
You may download and use the word template file on Canvas
- 2) Use fixed size font whenever you paste the text from terminal
Examples of monospaced fonts include **Courier**, **Courier New**, **Lucida Console**, **Monaco**, and **Consolas**.
- 3) For each lab question, include
 - a) **The command you typed or the action you performed.**
 - There are also a few problems asking you to read the document and answer the questions. For those questions, please type the information you got from reading.
 - b) **The output of the command.**
 - Please copy the text only. Do NOT include screen image.
 - When there is no output, or no sufficient output to show the command worked correctly, you need to show extra steps to show it worked as expected.

Prelab (total of 20)

1. Set your initial database account password

Our IT has created a database account for you on the MySQL server. The database account name is same as your ISO account. You need to use an online tool created by IT to set your password first.

- a. Go to URL <https://classdb.it.mtu.edu/>. When it prompts for password and username, enter your **ISO** account and password.
- b. Click the link “Change your password” to set your **database password**

2. Download and install MySQL Workbench

<https://dev.mysql.com/downloads/file/?id=520406>

<https://dev.mysql.com/doc/workbench/en/wb-installing.html>

3. Create connection in MySQL Workbench to our database server

See instructions here: <https://huskycast.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=d43485d0-7074-47b1-ac3d-ac5b00329ac8>

4. Set a database as the default schema.

Click tab “Schemas”, then right click the database of your choice and then click “Set as default schema”

5. Expand the schema with the “>” next to it or use “Schema Inspector” to check what is in your own database

There is nothing now. No tables, no views, no stored procedures, no functions.

6. Get familiar with the SQL editor

<https://dev.mysql.com/doc/workbench/en/wb-sql-editor.html>

Lab Questions

1. Open a query editor window

Click File -> New Query Tab

When Eclipse starts, it should have opened a tab "Query 1". Free feel to open multiple query tabs.

2. Create the student table in the query editor window

The table schema should be: student(id, name, dept_name, total_credits)

Make sure to use appropriate data type and make attribute id the primary key.

Type the SQL statement in the query tab, then click one of two execution buttons.

- A. If you forget about the create table statement, please check your class notes or See <https://dev.mysql.com/doc/refman/8.0/en/sql-data-definition-statements.html>
- B. If there is red x next to a line number, it means there is a syntax error
- C. Make sure you use semicolon (;) to separate different SQL statements

3. Modify the student table to add a new column age

Alter table ...

4. Check the properties of table

Use the following 2 ways

- describe student;
- show create table student;

5. Insert data into student

Insert 5 rows of data into student table.

See <https://dev.mysql.com/doc/refman/8.0/en/insert.html>
insert into ... ;

6. Query the data in student table

```
select * from students;
select id, name from students;
select * from students where total_credits >18;
select * from students where id>18 and dept_name="CS";
```

7. The use of the Primary key

Try to insert a student with existing ID, and see what happens!!!
You shall see an error message about duplicate keys.

8. Create table department

department(name, location, budget) with name being the primary key.
Insert some data into the table.

9. Create a foreign key

student(dept_name) references department(name).
alter table ...

Question: There are tuples in student table already. Now we want to create a foreign key constraint. What if the existing data does not follow the constraint?

Answer: The answer is the FK can't be created before you fix the data!

Tip: if your alter command failed to create the foreign key, please check if the existing data satisfy the reference constrain.

10. What does FK do?

Try to insert a student with a dept_name that does NOT in the department table, and see what happens.

11. Delete data

Delete a student by its id
delete from student where id = ...

12. Update data

Update student age by ID, check the value before and after the update
select age from student where id = ...
update student set age=21 where id= ...;
select age from student where id = ...

13. Create a data file

Exit out from mysql utility, use any text editor, create a text data file named "testin.txt". Each data entry is on its own line, each field is separated by tab. Here is some sample data. Feel free to change the data.

10	Alice	CS	80	21
20	Joe	EE	40	20

14. Load local datafile to tables

Ref : <https://dev.mysql.com/doc/refman/8.0/en/load-data.html>

Use full path and use forward slash (/) or double back slash (\\)

```
LOAD DATA LOCAL INFILE "/.../PATHNAME/.../testin.txt" INTO TABLE student;
```

IF there are any warnings, show the warnings:
show warnings;

If you receive error message like this,

ERROR 2068 (HY000): LOAD DATA LOCAL INFILE file request rejected due to restrictions on access.

you will need to change the setting in MySQL workbench to allow the access. See FAQ on Canvas:
https://mtu.instructure.com/courses/1467029/pages/faq?module_item_id=21916611

15. Run a batch job containing of multiple SQL statements

- 1) Read <https://dev.mysql.com/doc/refman/8.0/en/batch-mode.html> and answer the following questions
 - a) What is mysql interactive mode?
 - b) What is mysql batch mode?
 - c) How to tell mysql command to read input from a file?
 - d) How to save the output of mysql batch job to a file?
- 2) Use any text editor, create a text file to include many SQL statements and save it in myquery.sql. The sql command is separated by “;”. For example:

```
#This is an example of sql script file.  
use your_database_name;  
describe student;  
select count(*) from student;  
select avg(total_credits) from student;
```

- 3) You can use one of the three ways to run the SQL script
 - a) Open the SQL file and “execute all to Text”
 - b) Click File -> Run SQL Script
 - c) Run the command with the command line client, which has been installed when we install MySQL workbench.

C:\Program Files\MySQL\MySQL Workbench 8.0>

```
mysql -h ... -v -u... -p < myquery.sql
```

–v option: display the actual commands before showing its result.

<: Input/output redirect. The command will be feed from myquery.sql file instead of standard input.

To save the output on the terminal to a file , use the “>” to redirect the output to a file

```
mysql -h ... -u... -p < myquery.sql > myquery.out
```

Check the content in myquery.out:

```
more myquery.out
```